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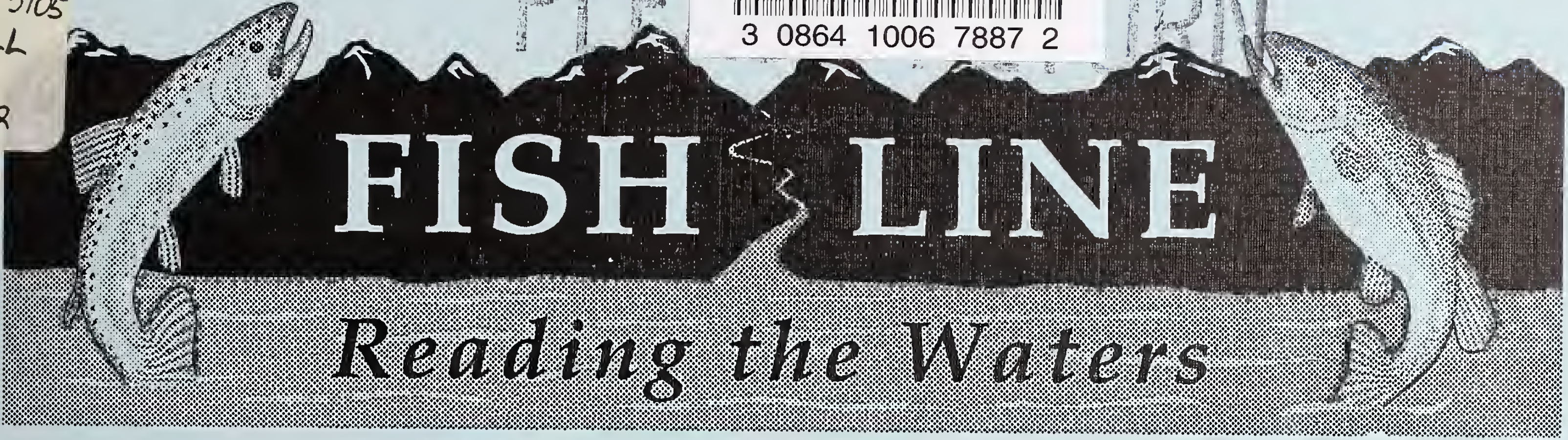

FISH LINE

Reading the Waters

Vol. 4, No. 2 *Produced by the Fisheries Division of the Department of Fish, Wildlife and Parks* April 1992

THE VALUE ($$$) OF FISHING

What is a day of fishing worth? How and why would one want to place a value on the experiences anglers have while fishing their favorite stream, lake, reservoir, or river. While many people would question the need for knowing what these special times are worth in dollars and cents, the fact is that our fisheries resources are often in competition with other uses; knowing their economic value is essential. Wise management requires knowing the benefits and costs of the alternatives.

The Montana Bioeconomics Project, which got it's start in 1985, provides estimates of the economic value of fishing in Montana. The U.S. Water Resources Council recommends two methods for estimating the demand for nonmarket resources like fishing. These two methods, the travel cost method and contingent valuation method (direct survey method), are used to value the different types of fishing in Montana. The initial effort focused on both stream and lake fishing and used the travel cost method. A more detailed analysis of trout stream anglers employed the contingent valuation method. Later studies of lake and reservoir anglers and warm water fishermen also used the direct survey method.

Before answering the question posed at the beginning of this article, a quick explanation of net economic value and expenditures is needed. Net economic value is simply the amount an angler would be willing to pay for a day of fishing at his favorite spot over and above what he actually had to pay. The concept of net economic value is difficult to grasp for some when hard cash is not exchanged. That does not mean the fishing experience has no dollar value. This line of reasoning would suggest that if you paid $20 for a seat at a Cats/Griz game, then it is worth $20; but if you got in free, the seat and experience were worthless.

Expenditures or out-of-pocket costs are just that to the angler, costs. They are what he had to pay for gas, food, lodging, fees, etc. for the fishing trip. Expenditures help track where this money is spent and the impacts of these monies on income, employment and taxes in the local communities.

So what is fishing worth in Montana? The survey of resident and nonresident anglers found the average value per fishing day for trout stream fishermen is $114 in 1989 dollars, and $60-$65 for lake and reservoir anglers pursuing salmonids as well as anglers seeking warm water species. These surveys also showed that nonresidents' out-of-pocket costs are significantly higher than residents'. Nonresidents spent from $200 to $540 per trip while residents spent from $36 to $80 per trip.

In addition to the economic information summarized in the final reports, anglers provided information on why they fish, why they chose certain places to fish, the type of equipment they used, and their attitudes and perceptions on fish management in Montana. Obviously this summary omits considerable detail; final reports on the Montana Bioeconomics Project are available from the Montana Department of Fish, Wildlife, and Parks, 1420 East Sixth Avenue, Helena, Mt. 59620.

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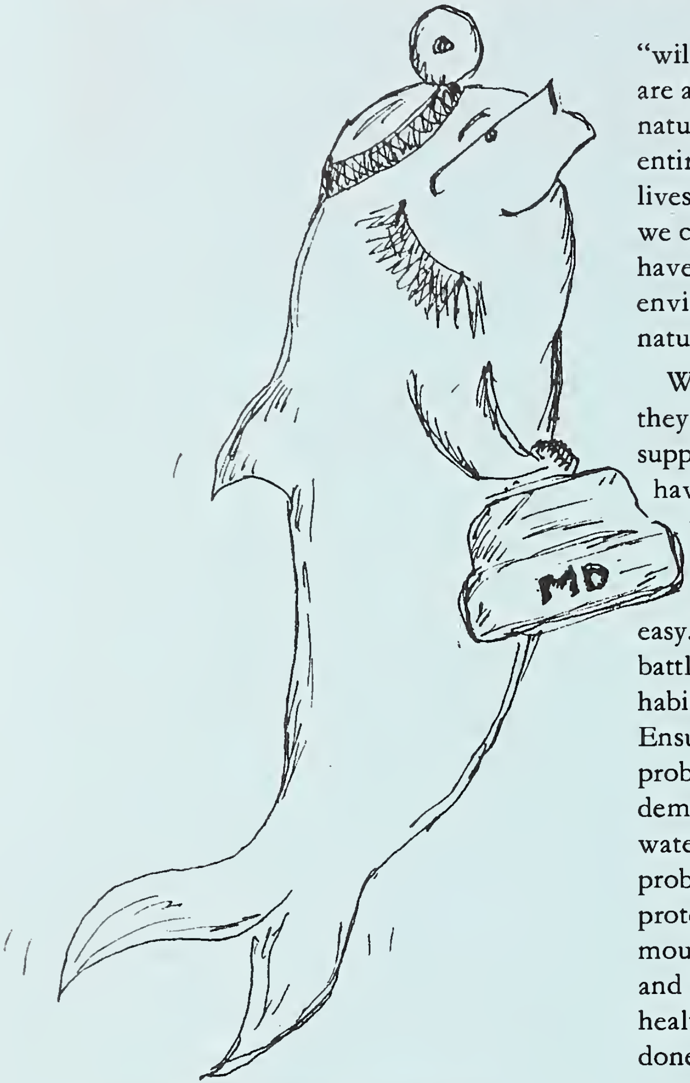
NOTES FROM THE FISH DOCTOR



Just What does It Take to Produce a Healthy Fish?

Fishermen like to catch fish. Some fishermen like to catch big fish. Some like to catch lots of fish. Most like to catch a lot of big fish. All like to catch healthy, quality fish from quality fishing water and have a quality experience while they are fishing. To many Montana fishermen a quality fish is a wild fish, or at least one that is generated in the stream and not "one of those hatchery fish." But others don't care where the fish came from as long as the fish are healthy and they can be caught.

So we have a lot of fishermen, all with different ideas of what the best fish to catch might be. The Montana Department of Fish, Wildlife and Parks works hard to provide quality, healthy fish to meet the expectations of all types of fishermen. A primary focus of fisheries management in Montana is "wild trout management." Wild trout are a product of the stream. They spawn naturally in the stream and develop its entire life in the stream or lake where it lives. Wild trout management is a luxury we can afford in Montana because we have such high quality streams and environments that are conducive to natural reproduction and fish survival.

Wild fish are great, but just because they reproduce and survive without supplementation doesn't mean we don't have to take care of them. For these fish to be healthy and to survive, the environment they live in must be healthy. Keeping quality habitat isn't easy. Fisheries managers fight a constant battle to preserve and enhance the habitat to maintain the wild fish fishery. Ensuring there is enough water is a problem, especially with more and more demands being placed on Montana's water. Protecting water quality is also a problem. That problem requires protection efforts from the top of the mountains, through the farmer's fields and past the cities. But to provide the healthy wild fish, that's what has to be done.

Montana's fisheries include a variety of opportunities for the sportsman. Though many lakes and reservoirs have quality water, they don't very often provide other essential requirements fish need for natural reproduction. These places require different efforts by Fish, Wildlife and Parks in order to provide healthy fisheries. Fish stocked from one of Montana's nine state fish hatcheries are required to keep plentiful healthy fisheries in many of Montana's reservoirs and lakes.

Hatchery fish provide many quality fishing opportunities in Montana. These fish represent a lot of hard work by Fish, Wildlife and Parks fisheries workers. Surveys and population estimates by fisheries managers determine the stocking needs. Then the job of producing the right fish for the job falls on the shoulders of the hatchery crew. Three of Montana's hatcheries maintain broodstocks. Wild brood sources are identified for special needs. Fish reared are scientifically grown to meet the requirements of their new home.

As in the wild, hatchery fish require a healthy environment to stay healthy. Extreme care is taken in the production of fish at the hatchery to insure the fish stocked are healthy. Unlike fish propagated in the wild, hatchery fish are often reared in close quarters and confined in very intense rearing conditions. This requires specific strategies to keep these fish healthy in the hatchery. An organism, like a bacteria or parasite that would not seriously effect fish in the wild can cause serious damage to a population of fish in a hatchery. So fish have to be constantly monitored and when they get sick, they have to be treated with a drug or chemical. Since the Food and Drug Administration has not registered many chemicals for use on fish, treatment options are very limited. So it is essential that hatchery sanitation and careful hatchery fish culture techniques be employed to keep the fish healthy. The result is quality hatchery fish for quality fishing opportunity.

What does it take to produce a healthy fish? It takes a lot of work, a lot of care and a happy home life. Whether the fish lives in a stream or a hatchery raceway, quality habitat is the key to healthy fish. When you think about it, fish aren't so different from us; a happy home put's a smile on our face, too.

The Montana Department of Fish, Wildlife and Parks receives federal funds and prohibits discrimination on the basis of race, color, sex, age, national origin or handicap. For information on complaints regarding discrimination, contact the personnel office of the Montana Department of Fish, Wildlife and Parks, 1420 E. Sixth Avenue, Helena, MT 59620, (406)444-2535; the Montana Human Rights Commission, 1236 E. Sixth Avenue, Helena, MT, 59620, (800)542-0807; or the Office of Equal Opportunity, U.S. Department of the Interior, Washington, D.C., 20240.

1991 Fishing Records for Montana

SPECIES	WEIGHT		ANGLER	YEAR	LOCATION
	(lbs.)	(ozs.)			
Arctic grayling	2	10 ½	Steve Houser	1986	Hyalite Reservoir
Bigmouth buffalo*	**35.50**		**John P. Cotton**	**1991**	**Missouri River**
Black bullhead	1	11	Mike Mitchell	1977	Horse Creek (McCone Co.)
Black crappie	3	2	Al Elser	1973	Tongue River Reservoir
Blue sucker	11.46		Doug Askin	1989	Yellowstone River (near Miles City)
Bluegill	2.64		Brent Fladmo	1983	Peterson's Stock Dam
Brook trout	9	1	John Cook	1940	Lower Two Medicine Lake
Brown trout	29	0	E. H. "Peck" Bacon	1966	Wade Lake
Bull trout	25	10	James Hyer	1916	unknown
Burbot (ling)	17.08		Jeff Iwen	1989	Missouri River (near Wolf Point)
Carp	38	8	Don Bagley	1986	Eyraud Lakes
Channel catfish	25.89		Gordon Wentworth	1984	Fort Peck Reservoir
			Tom Hilderman (tie)	1988	
Chinook (King salmon)*	**31**	**2**	**Carl L. Niles**	**1991**	**Fort Peck Reservoir**
Cisco*	1.46		Jim Liebelt	1990	Dredge Cut Trout Ponds
Coho salmon	4	14	Irven Stohl	1973	Fort Peck Reservoir
Cutthroat trout	16		William Sands	1955	Red Eagle Lake
Freshwater drum	20	7	Richard Lee	1987	Fort Peck Reservoir
Golden trout	4	8	Tom McGillvray	1989	Lightning Lake
Goldeye	2	14 ½	Vance Kielb	1989	Irrigation Canal (West of Malta)
Green sunfish**	**0.56**		**Roger Fliger**	**1991**	**Castle Rock Reservoir**
Kokanee (salmon)	5	15	Forrest Johnson	1976	Pishkun Reservoir
Lake trout	42	0	Dave Larson	1979	Flathead Lake (East Shore)
Lake whitefish	10	0	Ruby Mutch	1986	Lower St. Mary Lake
Largemouth bass	8	2 ½	Juanita Fanning	1984	Milnor Lake
Longnose sucker	3.27		Ray Quigley	1988	Marias River
Mountain whitefish	5	1 ½	Mervin Fenimore	1987	Kootenai River
Northern pike	37	8	Lance Moyler	1972	Tongue River Reservoir
Northern squawfish*	**7**	**14**	**Darrel Torgrimson**	**1991**	**Noxon Rapids Reservoir**
Paddlefish	142	8	Larry Branstetter	1973	Missouri River
Peamouth**	**0.64**		**Gordon Stewart**	**1991**	**Ashley Creek**
Pumpkinseed	0.95		Tim Colver	1985	Milnor Lake
Pygmy whitefish	0.16		Orlin Iverson	1982	Ashley Lake
Rainbow trout*	**29.02**		**Stanley Ross**	**1991**	**Kootenai River**
Rainbow-cutthroat hybrid	30	4	Pat Kelly	1982	Ashley Lake
River carpsucker**	**3.50**		**James Jessen**	**1991**	**Yellowstone River near Terry**
Rock bass	0.57		Don Holzheimer	1989	Tongue River Reservoir
Sauger	7.57		James Jessen	1990	Yellowstone River
Shorthead redhorse sucker	4.68		Ray Quigley	1985	Marias River near Loma
Shortnose gar	3	1	John Johnson	1977	Fort Peck Dredge Cuts
Shovelnose sturgeon	13.72		Sidney Storm	1986	Missouri River
Smallmouth bass*	6.09		Terry Druyvestein	1990	Fort Peck Reservoir
Smallmouth buffalo	10	4	Ron Skirvin	1989	Fort Peck Dredge Cuts
Stonecat	0.42		Robert Garwood	1985	Milk River at Havre
Tiger muskellunge*	**11.59**		**Jay Watson**	**1991**	**Lebo Lake**
Utah chub*	**1.47**		**Jan R. Mack**	**1991**	**Canyon Ferry Reservoir**
Walleye	14	14	Duane Leidholt	1989	Yellowstone River (near Miles City)
White bass	1	2	Ludwig Dubbe	1986	Fort Peck Dredge Cuts
White crappie*	2	6	Greg Johnston	1990	Tongue River Reservoir
White sturgeon	96	0	Herb Stout	1968	Kootenai River
White sucker	5	5 ⅓	Fred Perry	1983	Nelson Reservoir
Yellow bullhead	0.72		Wade Fredenberg	1987	Yellowstone River
Yellow perch	2.37		Vernon Schmid	1988	Ashley Lake

* New Montana Records for 1991
** New to Montana's Record List

Produced by the Fisheries Division of the Montana Department of Fish, Wildlife and Parks, 1420 East Sixth Avenue, Helena, MT 59620 (406) 444-2449

Montana Department of Fish, Wildlife & Parks

LAKE WHITEFISH

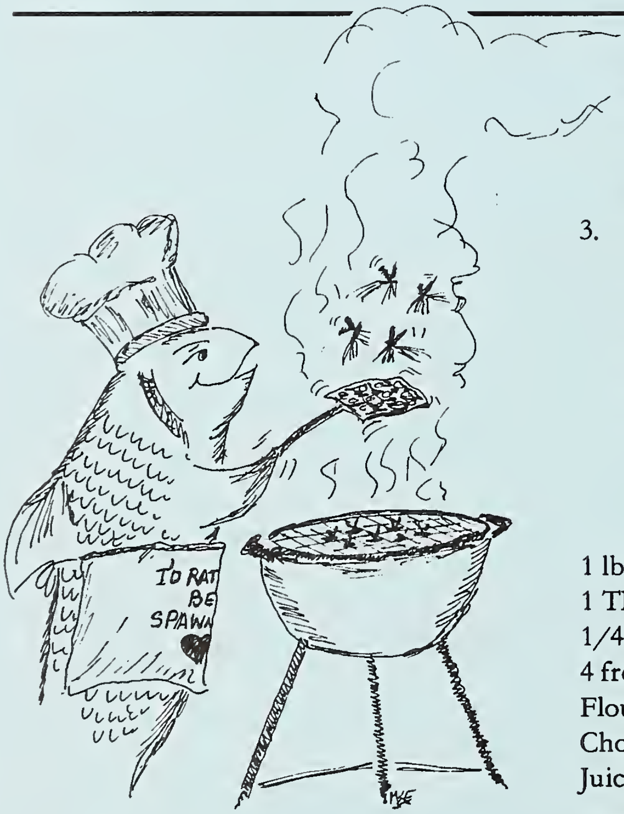
Lake whitefish have grown greatly in popularity in recent years as anglers have discovered how to catch these tasty, hard-fighting fish. Try them and you'll find they're very different from their cousins, the mountain whitefish. Popular fisheries have developed in July, August, November, December, January, and February in Flathead Lake; in December, January, and February in Whitefish Lake; and late October, November, and December in the Flathead River. In the lake look for whitefish in 20-60 feet of water over gravel bars and off points. During summer, early morning hours are generally best. In the river look for whitefish in calmer eddies over sand or fine gravel. The most popular section of river is from the Salmon Hole to Presentine Bar. Most anglers jig for whitefish using a variety of leadhead jigs or jigging spoons. Chartreuse, green, and yellow are the most popular colors and 1/4 ounce is the most useful size. In Whitefish Lake, anglers fish in early winter in the dark by tipping a small red fly or glohook with maggot and letting it hang just off the bottom.

Whitefish usually hit as the lure/jig is dropping or right as it hits the end of the line or bottom. It is important to fish within inches of the bottom, occasionally bumping bottom. We recommend a light action rod and 4-6 pound test line to detect the subtle hits and get the most sport out of these hard fighters. Everyone is still learning about the fishery so don't be afraid to experiment on times, locations, and techniques.

Whitefish take a little extra work once you've caught them, but you'll be rewarded with some mild, firm tasty fillets. To make it easier to fillet, we recommend cutting out the pelvic fins (the pair of fins in front of the anal vent) and slitting the fish from the vent to the gills. Fillet and skin the fish, and remove the ribs as you normally do. There is a layer of red muscle under the skin that has a fishy taste. We recommend removal of most of the layer by slicing it off with a fillet knife or blanching the fillets for 15 seconds in boiling water and scraping it off. It is especially important to remove the red meat if you are going to freeze the fillets. There are also a number of secondary rib bones that you can find by running your finger down the inside of the fillet. Remove these by cutting on each side with a fillet knife to take out a thin slice. The rib bones angle toward the fish's back.

Your hard work can now be rewarded with a delicious meal. Following are some of our favorite recipes. They're fairly simple and you'll wow your friends and family with your culinary expertise and a delicious meal. You can also substitute whitefish in any recipe that uses walleye, yellow perch, sole, pollock or similar fish. Many people enjoy lake whitefish smoked or pickled.

Enjoy!



MICROWAVE WHITEFISH

1. Melt enough butter to cover bottom of pan.
2. Arrange fillets in single layer. Sprinkle with lemon juice and seasoning as desired (seasoned salt, lemon pepper, chopped parsley, etc.). Cover (fish will pop and spatter).
3. Microwave on high about 2 minutes. Turn fillets. Microwave another 2 minutes on high. Fish is done when it is white and flakes easily. Let sit 2 minutes and serve with lemon, tartar sauce, etc.

WHITEFISH BONNE FEMME

1 lb. Fillet of Whitefish
1 TBSP Butter
1/4 cup White Wine
4 fresh Mushrooms, sliced
Flour, Salt, Pepper
Chopped Green Onions
Juice of 1/2 Lemon

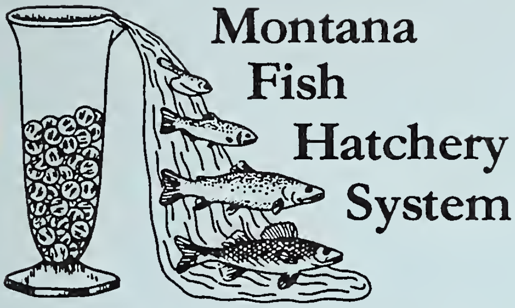
Heat butter 250 degrees. Saute green onion and mushrooms—dredge fish in flour. Season with salt and pepper. Cook fish for 2 minutes—turn—cook for 2 minutes. Pour wine and juice of 1/2 lemon over fish. Simmer 2 minutes longer. Serves 4.

WHITEFISH ALMONDINE

1. Rinse and drain fillets, cut into 3-4" chunks.
2. Mix egg and milk in a bowl to a thick batter (about 1 egg/7-8 chunks).
3. Heat skillet on medium heat. Add oil to cover bottom (a little butter if desired).
4. Roll fish chunks in flour, dip in egg batter. Repeat. Place in single layer in skillet.
5. Cook fish until golden brown on side (about 5 minutes), turn and cook another 5 minutes.

Almondine Sauce:

After you turn the fish, heat small skillet or saucepan on medium-high heat. Melt enough butter to cover bottom of pan. Add enough slivered almonds to cover bottom. Stir continuously to prevent burning until golden brown (3-4 minutes). Remove from heat, add a good squirt of lemon juice, (mixture will bubble up and turn dark). Place fillets on platter and spoon almondine sauce over them.



MURRAY SPRINGS FISH HATCHERY

The Murray Springs Fish Hatchery was built by the U.S. Army Corps of Engineers (COE) in 1979 to partially mitigate the loss of fishery resources when Libby Dam was constructed on the Kootenai River and formed Lake Koocanusa. Libby Dam was completed in 1975 for flood control, power generation, and recreation. Hatchery operations are funded by the COE and operated under contract by the Montana Department of Fish, Wildlife and Parks.

The hatchery began operating when a first shipment of westslope cutthroat eggs were received on June 4, 1979, from the Jocko River Trout Hatchery in Arlee. The original goal of the hatchery was for it to become Montana's primary broodstock and rearing facility for westslope cutthroat trout, with most of its production designated for Lake Koocanusa. Westslope cutthroat are native to Montana and have become a species of special concern due to habitat loss and competition with introduced species.

The state's entire supply of westslope cutthroat broodstock was moved to Murray Springs Fish Hatchery from Arlee in 1979. Rearing and planting of cutthroat in Lake Koocanusa was intended to provide a large reservoir and tributary fishery.

Maturation and survival of westslope cutthroat broodstock steadily declined from their exposure to conditions at Murray Springs. The steady 52°F year-round water temperature at the hatchery proved detrimental to brood development and egg production of adult cutthroat, but provided excellent conditions for growth and development from eyed eggs to planting size fish.

In the fall of 1986, the westslope broodstock was moved to the Washoe Park Fish Hatchery in Anaconda. About this time, kokanee salmon, which had been introduced in Lake Koocanusa from Canada, became the focus of fish management in Lake Koocanusa. To take advantage of this situation, a strategy was developed for the reservoir, which included the stocking of Kamloop's rainbow. To address changing conditions on the reservoir, Murray Springs began raising Kamloop's rainbow, kokanee salmon, and westslope cutthroat, as a production station.

Murray Springs presently raises about 1.3 million fish annually, 600,000 each of cutthroat and kokanee, and 100,000 Kamloop's. Most of the production from Murray Springs is stocked in Lake Koocanusa, although plants are made into many area lakes by helicopter and truck.

Hatchery operations are continually reviewed and changed, as necessary, to meet the needs of the fishery in Lake Koocanusa and surrounding waters.

SPORT FISH RESTORATION ACT

Anglers financially help many fisheries programs in Montana every time they purchase a fishing rod, reel, tackle box, lure, bait, fishing line, electronic fish finder, boat gasoline, or any other product associated with sport fishing.

In 1950 the U.S. Congress passed a bill creating the Sport Fish Restoration Act that placed a 10 percent excise tax on certain fishing equipment. States, like Montana, receive money from this excise tax to improve sport fisheries. This money is in addition to what the Montana Department of Fish, Wildlife and Parks receives when you purchase a fishing license.

The excise tax is included in the price of fishing products. Sporting goods manufacturers pay the tax, then pass it to the consumer.

Each year the tax is collected by the U.S. Treasury Department, totaled, and transferred to the U.S. Fish and Wildlife Service (USFWS). The USFWS apportions the funds to the states based on a system that combines the states area and fishing license sales.

In 1984 conservation and sporting groups, tackle manufacturers, and others again supported an amendment to the act to increase the variety of fishing products taxed. Congress passed the bill, and more funding for sport fishing became available to all the states. Before 1984, the Montana Department of Fish, Wildlife, and Parks received about $745,000 annually. At present, Montana receives more than $4.5 million per year.

How has your money been spent in Montana to improve fishing?

- Annually, about $1.9 million is dedicated to fisheries survey and inventory work across Montana. These efforts include fish population monitoring, stream protection, planning work with public involvement, fishery and habitat enhancement.
- So far, more than $1,350,000 has been spent on the renovation of 68 sites in the Fishing Access System.
- Montana hatchery fry and fingerling stocking programs are also supported by Sport Fish Restoration Act monies. The Lewistown, Big Timber, Giant Springs, Miles City, and Anaconda hatchery facilities were reconstructed with the use of these funds. More than 24 million warm and cold water fish are now annually produced by these improved hatchery systems.
- Boaters also benefit from these dollars. The act mandates that states spend 10 percent of the monies to develop and maintain motorboat facilities. During the last five years, motorboat facilities have been funded at 22 sites across Montana for a total of $2.2 million. This effort will continue in future years.

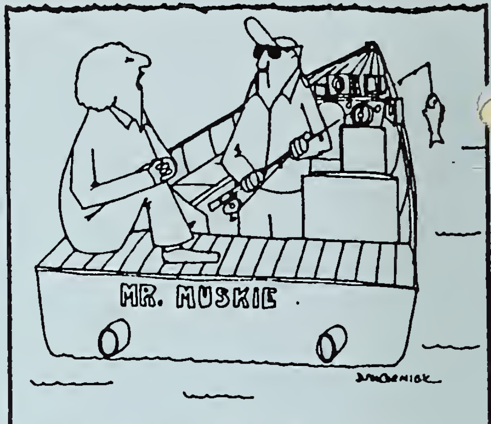
So remember, each time you purchase that rod, reel or other equipment, part of your dollars are helping the conservation of sport fisheries in Montana. You may not notice it at the checkout counter, but you will on the water.

RIVER RESTORATION PROGRAM UPDATE

Two years ago, the first funds were deposited into the River Restoration Program (RRP). The program funding source, authorized by the 1989 Legislature, is fifty cents from the sale of each resident fishing license and one dollar from each non-resident fishing license. The Montana Department of Fish, Wildlife, and Parks has authorized funding for 17 projects at a cost of about \$160,000. Approved project proposals were received from 6 private individuals, 6 conservation districts, 3 Trout Unlimited chapters, the Big Hole River Foundation and one state agency.

Projects approved for funding involve fencing for riparian enhancement, fish passage, fish habitat enhancement and stream rehabilitation, channel and bank stabilization, alternative irrigation diversion demonstrations and watershed restoration. Seven of these projects have been completed. In-kind services and matching funds have more than doubled the funding level provided by RRP. All projects involve private land.

March 1, 1992 was the last deadline for submitting new river restoration projects. About \$55,000 is available for new projects.



"The way I see it, that first perch cost you about \$11,600."

If you would like to share your views or offer suggestions, please send them to FISH LINE, Department of Fish, Wildlife and Parks, Fisheries Division, 1420 East Sixth Avenue, Helena, MT 59620, (406) 444-2449.

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Calendar of Events — May 1992 - June 1992

May 1, 1992 thru June 30, 1992	Yellowstone River Paddlefish season downstream from mouth of Cottonwood Creek
May 15, 1992 thru June 30, 1992	Yellowstone River Paddlefish season from the mouth of Bighorn River downstream (approximately 4 miles downstream of Intake Diversion Dam)
May 16, 1992	Opening Fishing Season for Streams
May/June 1992	DRAFT Canyon Ferry Management Plan available June 1992
June 1-7, 1992	National Fishing Week
June 11-12, 1992	Fish, Wildlife and Parks Commission Meeting, Helena
June 27-28, 1992	Lewis & Clark Festival, Giant Springs State Park — A variety of historical activities for all ages. Plays, a buffalo roat, portage run, and more.
July 16-18, 1992	Governor's Symposium on North America's Hunting Heritage, MSU, Bozeman
July 18-19, 1992	Bannack Days, Bannack State Park

Produced by the Fisheries Division of the Department of Fish, Wildlife and Parks.

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